

EXPERIENCE YOUR AMERICA

The Pursuit for POPs in Parks

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NPS Air Resources Division
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The Genesis: Scientific Interest





- Toxic compounds pose health threats to wildlife and humans
 - Reproductive success, growth, behavior, disease, survival
- Evidence of trans-Pacific transport of toxic, airborne contaminants –
 - banned POPs detected Alaska and Western US
 - Toxic levels of POPS in Canadian ecosystems
- Likely accumulation at high elevations and latitudes (snow as pathway)
- Bioaccumulation through food webs

The Genesis: NPS Management Interest





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- Potential risk to park resources, but little info about potential effects on park resources
- Concern about subsistence-based populations
- Parks contain relatively natural systems that can serve as early warning sites for the rest of the continent
- International treaty negotiations
- NPS responsibilities and legal mandates

NPS Mission and Mandates



"...conserve the scenery and the natural and historic objects and wild life therein...as will **leave them** unimpaired for the enjoyment of future generations." (NPS Organic Act)



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"Wilderness areas...shall be administered for the use of the American people in such a manner as will **leave them unimpaired** for future use and enjoyment as wilderness..." (Wilderness Act of 1964)

"...preserve, protect and enhance the air quality in national parks, national wilderness areas, national monuments, national seashores, and other areas of special national or regional natural, recreational, scenic, or historic value." (Clean Air Act as amended in 1977)



Park Managers Wanted to Know...



Are toxic air pollutants causing harm to park resources, and if so, what should we do about it?

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Are they present?
Which ones? In
what? Where?
How much?

What are effects?
Are they
"adverse"?

Where are they coming from?

What can be done?



Charting a Course



- Recognize when you need help
 - Lack of expertise in NPS Air Quality Program related to toxic air pollutants
- Gather the Best Minds: Workshop (June 2001)
 - Discuss potential risks to parks
 - Solicit information & recommendations from experts
 - EPA, USGS, NOAA, USDA, USFWS, and academics
 - Pros and cons of various indicators/endpoints and methodologies
 - Avoid duplication, attract interest & potential partners
 - Begin developing monitoring strategy
 - Potential objectives & geographic scope
 - Outline basic study plan based on different funding scenarios (\$200k - \$600k)

Resist Unrealistic Expectations



Refine objectives:

- Are contaminants present?
 - If so, where are they accumulating and which ones pose threat?
 - What indicators are most useful?
 - What are sources for contaminants?



Think big, but prioritize and be prepared to downsize



- Geographic scope
 - Alaska and West
 - Elevational and latitudinal transects
 - Primary: Alaska, Cascades, Sierra Nevada, Rockies
 - Secondary: broader geographic representation
- Media for monitoring
 - Snow, fish, sediments
 - Freshwater, subsistence food, lichens & mosses, other vegetation
- Data analysis
 - Organic compounds (banned and new age), metals
 - Modeling atmospheric transport
- Plan B: Fewer media over broader area, or intensive work at fewer locations?

Trust us, the check's in the mail!



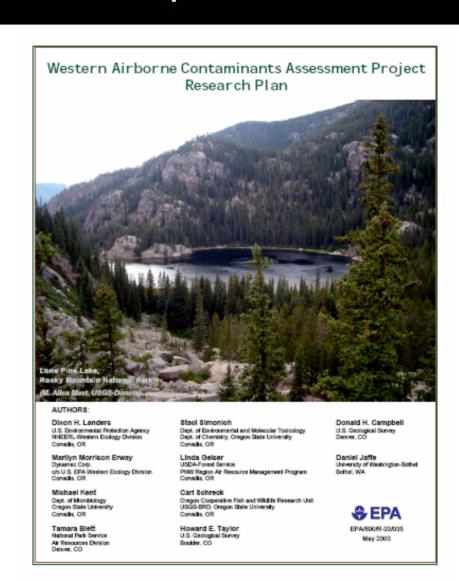
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- Funding challenges in the NPS
 - Available resources within ARD: \$100 200k
 - Annual funding cycle
 - Project funds available from multiple sources,
 but...
 - Park submittal, regional prioritization
 - Limits on regional submissions
 - Stiff competition
- Researchers love a good idea...and a challenge!

Developing the Road Map

- NATIONAL PARK SERVICE
 - EXPERIENCE YOUR AMERICA

- World-class Pls accepted challenge
- Draft research plan, including QA/QC
- Peer review by international panel
- Management feedback

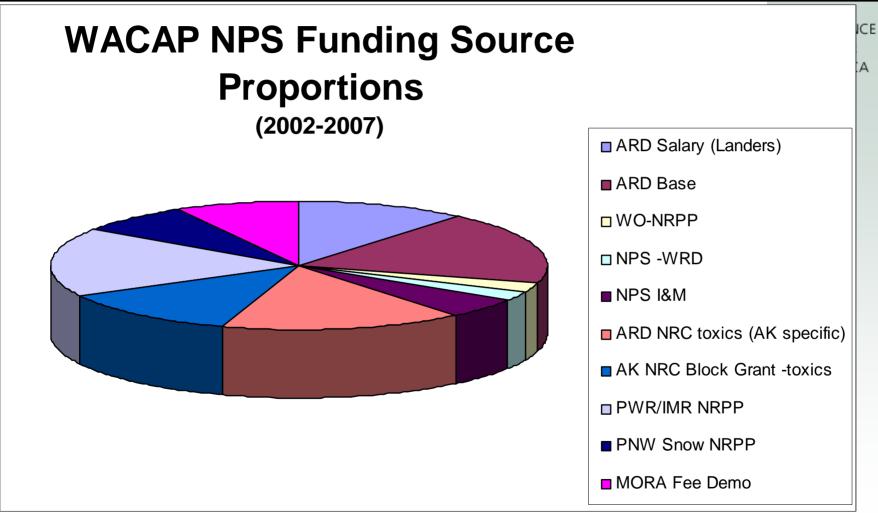


WACAP Investigators

Project Element	PI(s)/Leads	Key Others
Management	Chris ShaverNPS-ARD	Tamara Blett, Judy Rocchio, Bud Rice, Park Staff, WRD
Scientific Direction	Dixon Landers— EPA/WED	All WACAP PIs, TamaraBlett
Organic Analysis	Staci Simonich - OSU	Kim Hageman, DaveSchmedding Sascha Usenko, Luke Ackerman, Glenn Wilson
Metal Analysis	Howard Taylor- USGS	David Roth
Snow	Don Campbell- USGS	George Ingersoll, Alisa Mast
Fish	Mike Kent- OSU	Carl Schreck, Adam Schwindt, Jennifer Ramsay
Sediments and Lake Water	Dixon Landers- EPA	Marilyn Erway
Willow Bark & Subsistence Food	Staci Simonich - OSU	Bud Rice
Lichen	Linda Geiser- USFS	Peter Neitlich, Jim Bennett Boug Glavich
Atm. Transport	Dan Jaffe- U. of Wash.	

If you build it, the money will come





\$300,000- 950,000/yr NPS funding, plus approximately 30% in-kind support from partners

Diversification reduces risk



- Annual snow sampling in 8 primary parks
 - Atmospheric loading measure
 - 50-90% of annual precip is snow in many alpine sites
- Fish, water, and sediment sampling 2-3 of primary parks/year
 - Food web impacts and bioaccumulation
 - Hydrophilic current use chemicals measure
 - Trends in contaminant loadings
- Moose tissue sampling in Alaska parks
 - Subsistence food source
- Supplemental vegetation sampling in 8 primary parks plus 12 other secondary sites
 - Ecosystem exposure,
 - Metals bioaccumulation
 - Comparison across sites

Launching the Troops: Logistics Coordination with Park Staff Involvement





****DRAFT**** WACAP Summer 2004 Logistics- Alaska Parks

WACAP Summer 2004 Logistics- Alaska Paks *****DRAFT****

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Date	Day	
July 21		Ship equipment and coolers for Austic sites to Kotzebur via Aliska Air Priority Service, use EPA Suburban and tealer to drive equipment to PDX:
July 26	L	fly to Kotzebue; stay in Norsak NP facilities (Hog)or motel
July 27	2	organize gear, repack, meet with pilots, attend orientation session
July 28	3	fly into Matchank Like (2 hour flight one way) set camp 2000 llss of gear and 8 people
July 29	4	Matchank Lake: fish, sore, water
July 30	- 5	Matchank Lake: fish, one, water
July 31	6	move opike camp is Burnal basis, coming gear, wire sampling gear, fish morecosing gear, start wall gear, 2 a plane loads. NOTE: Need plane with the goop, 3 fillidings, to ferry personnel and cones/samples, will need to feedbase planter plane from Kotechie clarity (flight time from Kotechie clarity) (flight time from Kotechie clarity).
August I	7	Burial Like: fish, one, water, fly cores back to Manhand, for processing
August 2	8	Burial Like: fish, sore, water
August 3	9	move spike camp back to Matchanik
Андият4	1.0	weather day
August 5	1.1	fly to Kotzebue, ship samples and gear to Andronge via Alaska Air Gold Label; stay in Kotzebue
August 6	12	Fly from Kotzelste to Anchonge, rent Subultans, pick up gen, getmore dry ice, ship sample/coolers to Cowallis via Fed Ex by 2.00 pm; stay in motel in Andronge
Associate?	1.3	Point to Postillate in Postal NP setus come

SCIENTIFIC RESEARCH AND COLLECTING PERMIT

Grants permission in accordance with the attached general and special conditions



United States Department of the Interior National Park Service Sequoia & Kings Canyon National Parks

> Entrance Fee Waived Wilderness Permit

Study#: SEKI-00078

Permit#: SEKI-2003-SCI-0004

Start Date: Feb-21-2003

Expiration Date: Dec-31-2003

Coop Agreement#: n/a

Park Code: SEKI-2003-0078

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Name of principal investigator:

Name: Dr Dixon Landers Phone: 541-754-4427 Email: Landers.Dixon@epa.gov

Spreading the Word: Internal and external communication about the project





How Will Results be Used?



- It depends...on what we find where
 - Current use vs. banned-in-US?
 - Local influences vs. global transport?
 - Presence vs. potential effect?
 - Message, audience, and objective will vary
- Information & education
 - Parks provide good platform for pitching science to public
 - Public awareness/support builds political will
- Development of solutions through collaboration with regulatory agencies and stakeholders (domestically) &/or international/diplomatic arenas
 - NPS has no regulatory authority, but plays well with others who do

Benefits Beyond the Science



- Changes to NPS project funding process
- Relationships built with governmental and academic partners
 - Excellent teamwork
 - Extraordinary leadership (Dixon: take a bow)
- Capacity-building among NPS field staff
- Parks recognized as places for cutting edge science